Does NGO in-service training explain abortion method mix in Brazil?

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Background

Unsafe abortion is a serious public health problem in much of the world. Estimates indicate that about 46 million abortions occur each year and that 20 million of these abortions occur in unsafe conditions (Guttmacher, 1999). In South America, 18% of all maternal deaths are the result of unsafe abortion (Daulaire et al., 2002). Despite the ethical, moral, and legal constraints countries place on abortion, numerous international agreements[1] indicate that every woman should have timely access to quality post-abortion care (PAC)[2].

In Brazil, an estimated 1.4 million abortions are performed in the country each year (Singh and Wulf, 1991) with most of them occurring outside the legal system. Brazilian hospitals reported 246,076 PAC procedures in 2005 (DataSUS). Though vacuum aspiration (VA) is the preferred technology for PAC treatment, well over 90% of PAC procedures since 2002 utilized dilation and curettage (D&C)[3]. The low rate of VA is surprising given that Ipas and other reproductive health organizations have been providing VA training to medical professionals for 13 years.

The objective of this analysis is to determine the extent to which clinical training of medical

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[1] United Nations International Conference on Population and Development (ICPD), held in Cairo in 1994; the Fourth World Conference on Women, in Beijing, China in 1995; and the United Nations follow-up meeting to ICPD in 1999, commonly known as ICPD+5.

[2] PAC is an approach for reducing injuries and deaths from incomplete and unsafe abortions and their resulting complications. The five fundamental elements of PAC are

- Community and service provider partnerships: For prevention of unwanted pregnancies and unsafe abortions, mobilization of resources (to help women receive appropriate and timely care for complications from abortion), and to ensure that health services reflect and meet community expectations and needs.
- Counseling: To identify and respond to women's emotional and physical health needs and other concerns.
- Treatment: Of incomplete and unsafe abortion and complications that are potentially life-threatening.
- Contraceptive and family planning services: To help women prevent an unwanted pregnancy or practice birth spacing.
- Reproductive and other health services: That are preferably provided on-site or via referrals to other accessible facilities in providers' networks. (Ipas, 2006).

[3] Reimbursement for VA procedures began in November 2001 and no VA procedures were reported in any state prior to that date.

professionals increases the use of vacuum aspiration (VA) in post-abortion care (PAC) in Brazilian in-patient facilities. Findings are expected to show that the number of trained medical professionals will explain some amount of VA proportion increase but that social and health system characteristics are significant influences.

Data

Abortion procedure data from January 1994 through December 2005 were obtained at the national level and for eight Brazilian states (Bahia, Ceará, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, Rio Grande do Sul, and São Paulo) and Distrito Federal. These data were obtained from the Departamento de Informática do Sistema Único de Saúde (Informatics Department of the Brazilian Health System, DataSUS). DataSUS compiles and manages an on-line national database of reimbursement information for medical procedures performed in public and private health facilities and paid for by the Brazilian universal health care system (Sistema Único de Saúde, or SUS). SUS guarantees health care to all Brazilians[4].

Training data were gathered from Ipas monitoring systems from July 1999 through December 2005 and culled to include only clinical trainings with a VA theme or component, lasting 8 or more hours.

In the next phase of analysis, uterine evacuation data will be obtained from DataSUS for the additional 18 Brazilian states. Demographic and health system characteristics will be gathered from the Brazilian Institute of Geography and Statistics and the 1996 Brazilian Demographic and Health Survey (BEMFAM, 1997).

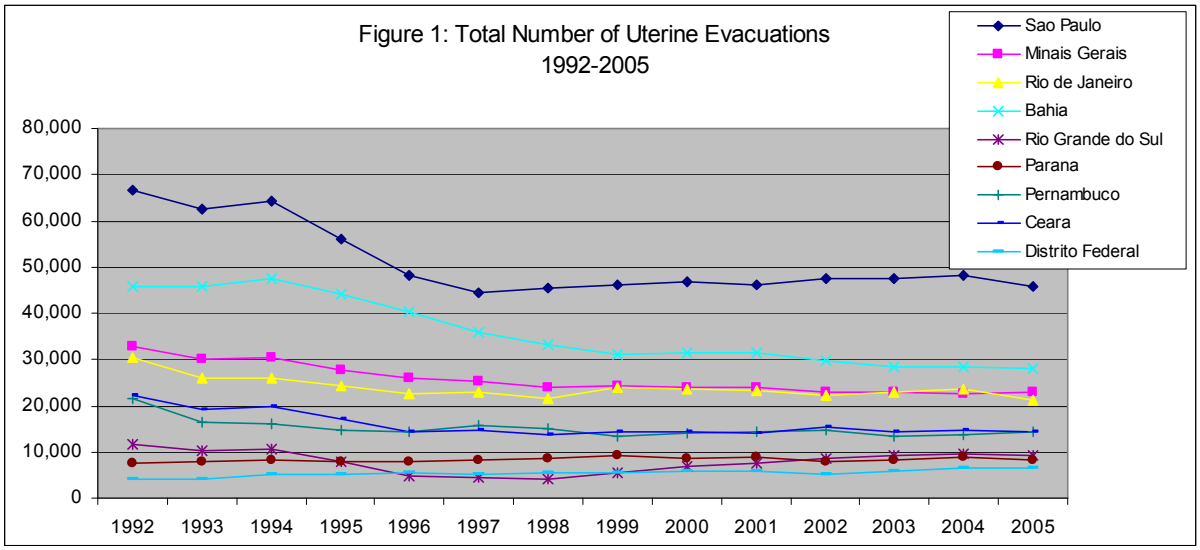
Preliminary Analysis: Methods and Results

Yearly totals of uterine evacuations for each of the eight NGO intervention states and one district (heretofore referred to as "areas") were calculated from 1992 through 2005. Monthly and yearly VA

[4] A proportion of wealthy Brazilians do not use the system because they are privately insured and abortion procedures sought by women in this population may not be captured in the data.

proportions[5] were determined nationally and for each intervention area. Exploratory and graphical analyses were used to investigate trends in uterine evacuation case loads at the national and state levels. Monthly VA proportions for each of the nine areas were plotted against the number of medical professionals trained from November 2001 through December 2005.

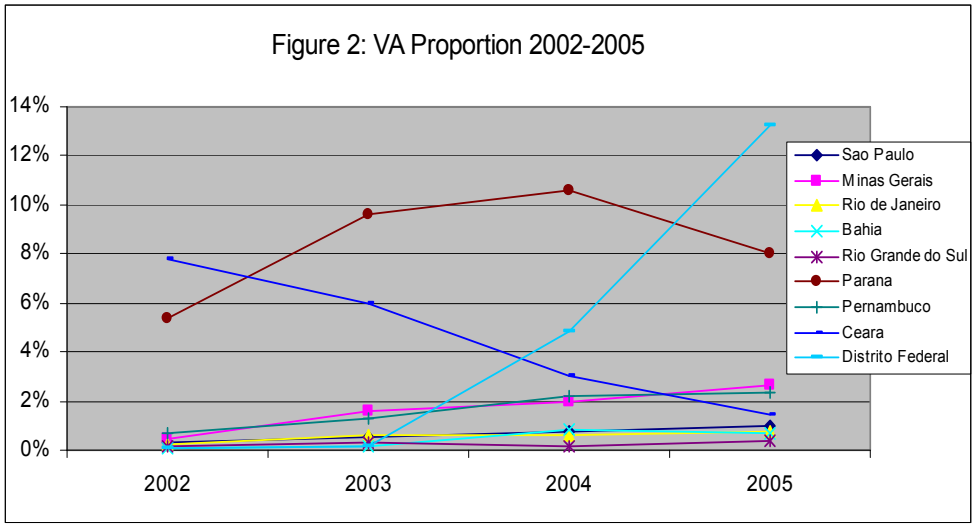
Overall, the number of total uterine evacuations declined from 1992 until approximately 1999 (Figure 1). After 2000, the total number of uterine evacuation procedures held fairly steady through 2005. This pattern is common to all nine areas observed in the preliminary analysis.



VA proportion

VA reporting began in November 2001 and the proportion of VA procedures reported increased gradually from 2002-2005 in most of the areas investigated (Figure 2). However three states (Ceará, Paraná, and Distrito Federal) display trends that are very different from the other six areas.

[5] VA proportion = VA/[D&C + VA]



Distrito Federal shows a sharp increase in VA proportion after 2003 (from 0.1% in 2003 to 13% in 2005). In 2005, the VA proportion for Distrito Federal was the highest of all areas observed. In Paraná, VA proportion increased sharply from 2001 to 2004 (from 0% to 10.6%) and then dropped slightly in 2005 (to 8%). In Ceará, VA proportion peaked in 2002 at 7.8% and then dropped gradually through 2005 to 1.4%.

Relationship of Trainings on VA Proportion

From the preliminary graphical analyses (Appendix A) it is apparent that the relationship between the number of medical professionals trained and VA proportion is not linear. A measure of training relative to other social and health system characteristics may be a more reliable predictor of training effectiveness.

Future Analysis: Methods and Expected Results

The next phase of analysis (which will be completed by March 2007) will use difference-in-differences regression analysis to estimate the effects of NGO clinical training on abortion method mix. The difference-in-differences approach models the training effect by estimating the difference between VA proportions at two time points for states with trained medical professionals (cases) and states without NGO PAC training programs (controls). The difference between these groups estimates the effect of

training on VA proportion. This methodology controls for any differences between states that remain constant over the time-period but are unobserved. Additional factors can be added linearly to the model or as interaction terms if appropriate.

It is likely that the number of trained medical professionals does impact method mix, however the proportion of VA is likely to vary by health system characteristics as well.

Limitations

Entrenched administrative procedures and financial incentives that favor D&C may bias the accuracy of VA procedure reporting during part of the time period. Additionally, the total number of uterine evacuations includes legal abortions as well as PAC cases. Software coding in the DataSUS system does not allow legal abortions to be coded as VA. Therefore, all legal abortions would appear only in the denominator of the VA proportion and would bias VA proportion downward systematically across all areas. Other potential confounders are state variation in a) pre-service PAC training programs, b) women's preferences for a specific UE method, c) potentially the use of misoprostol as an abortofacient.

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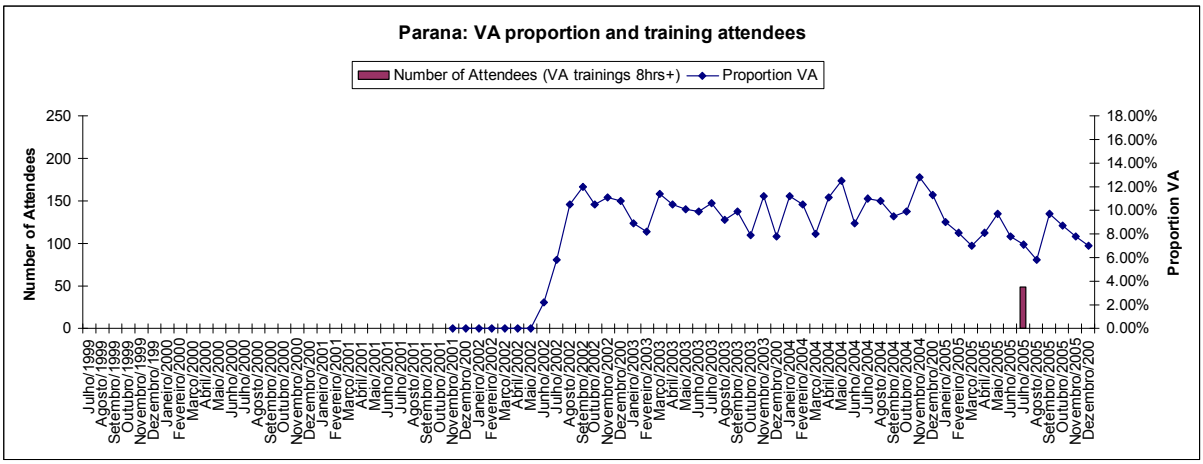
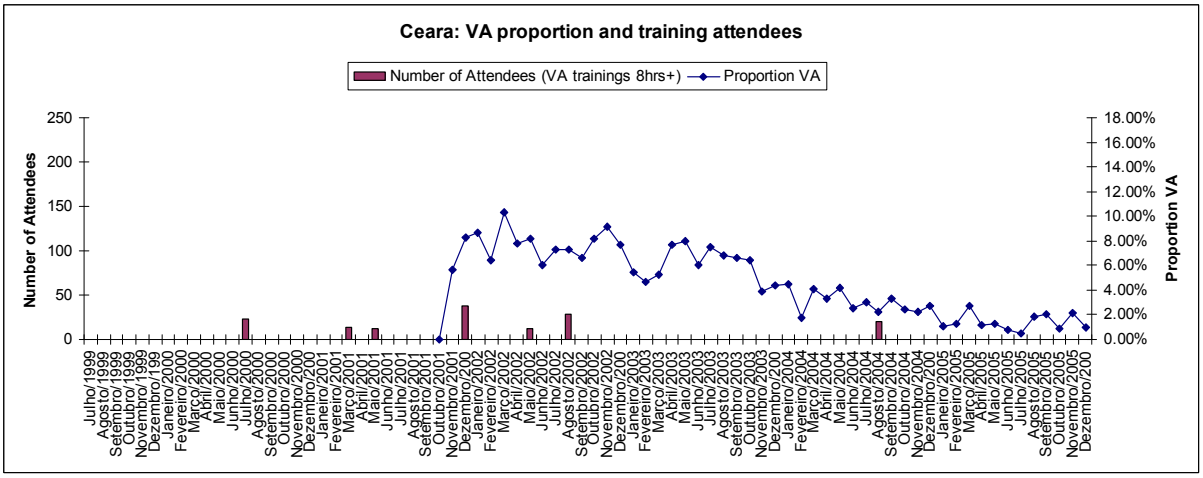
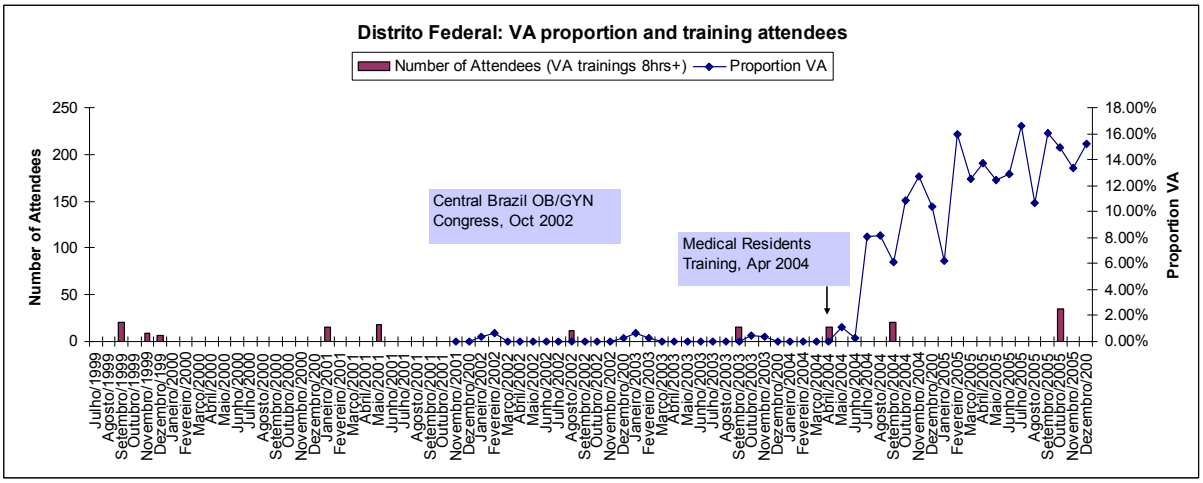
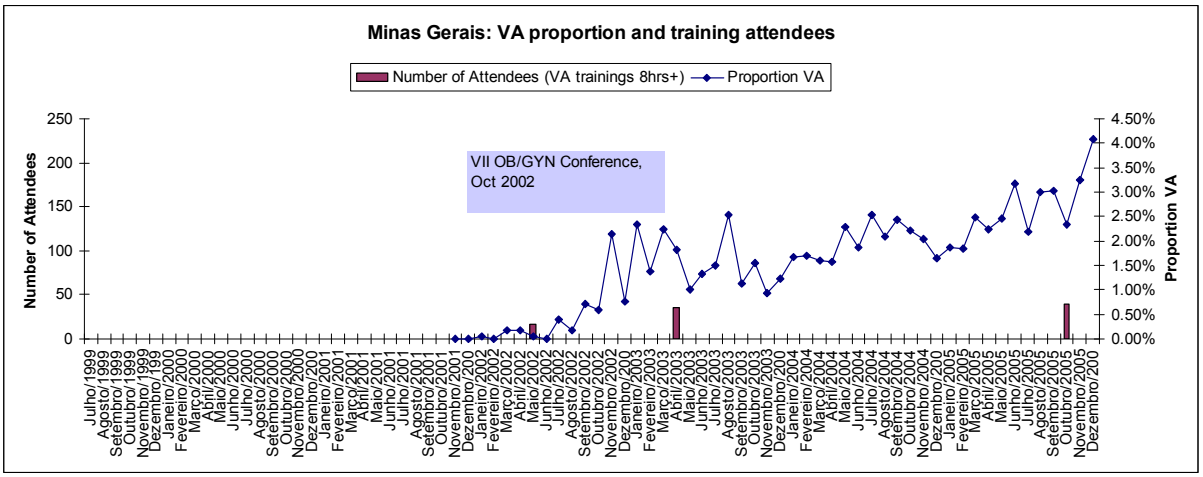
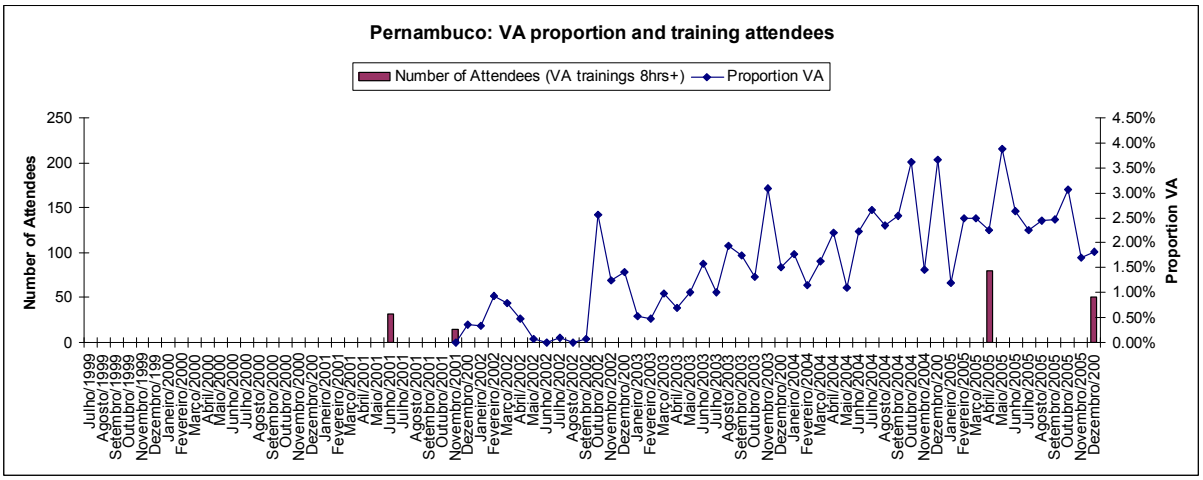
Appendix A

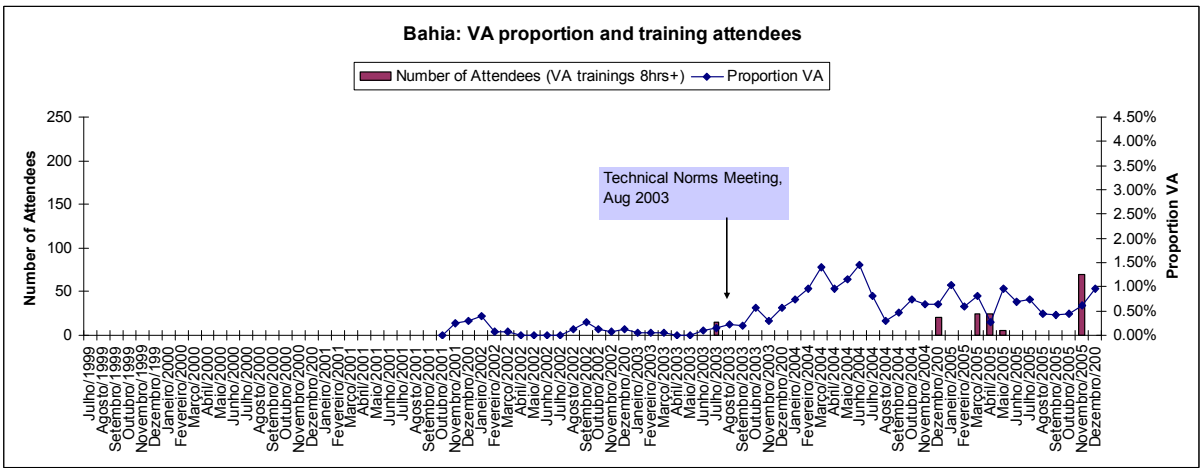

Parana: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA

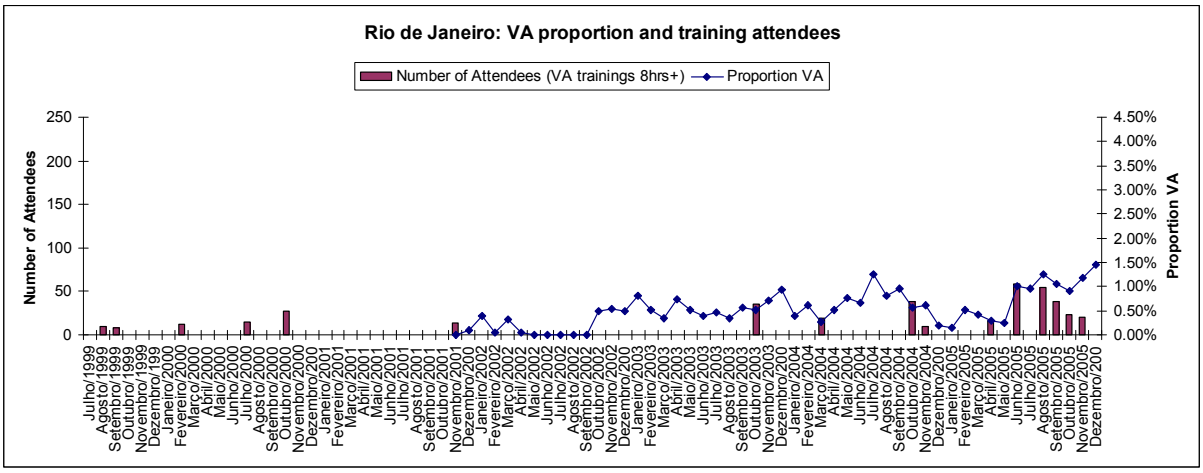

Ceara: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA

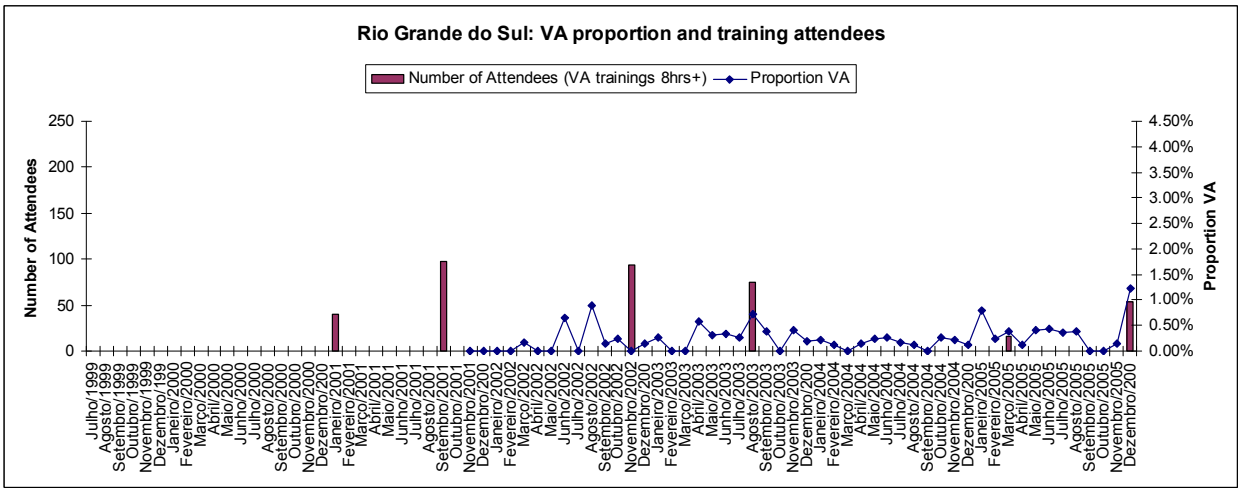

Distrito Federal: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Central Brazil OB/GYN Congress, Oct 2002
Medical Residents Training, Apr 2004
Number of Attendees
Proportion VA

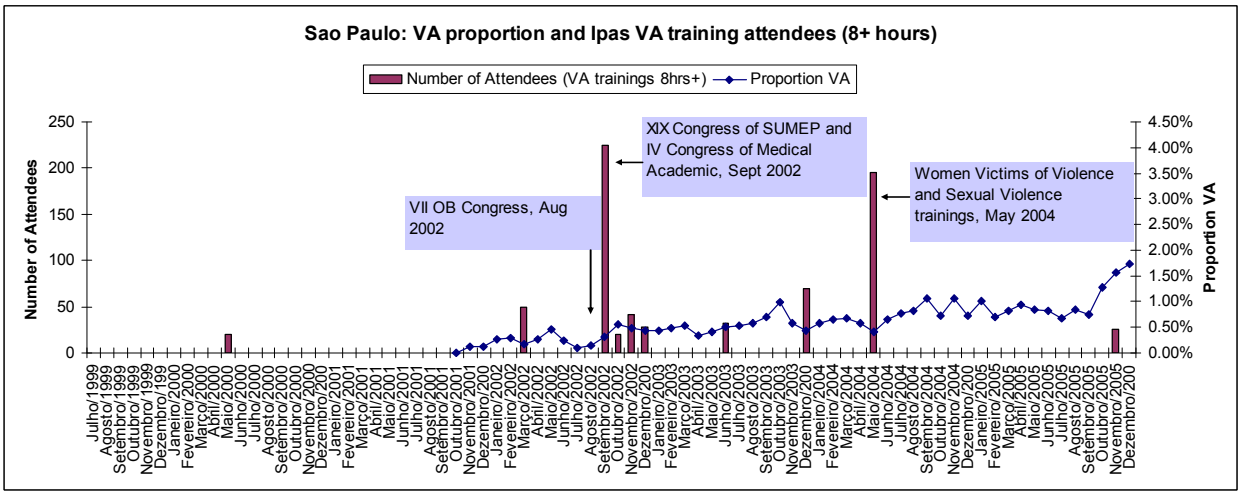

Minas Gerais: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA
VII OB/GYN Conference, Oct 2002


Pernambuco: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA


Bahia: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA
Technical Norms Meeting, Aug 2003


Rio de Janeiro: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA


Rio Grande do Sul: VA proportion and training attendees
Number of Attendees (VA trainings 8hrs+)
Proportion VA
Number of Attendees
Proportion VA


Sao Paulo: VA proportion and Ipas VA training attendees (8+ hours)
Number of Attendees (VA trainings 8hrs+)
Proportion VA
XIX Congress of SUMEP and IV Congress of Medical Academic, Sept 2002
VII OB Congress, Aug 2002
Women Victims of Violence and Sexual Violence trainings, May 2004
Number of Attendees
Proportion VA